

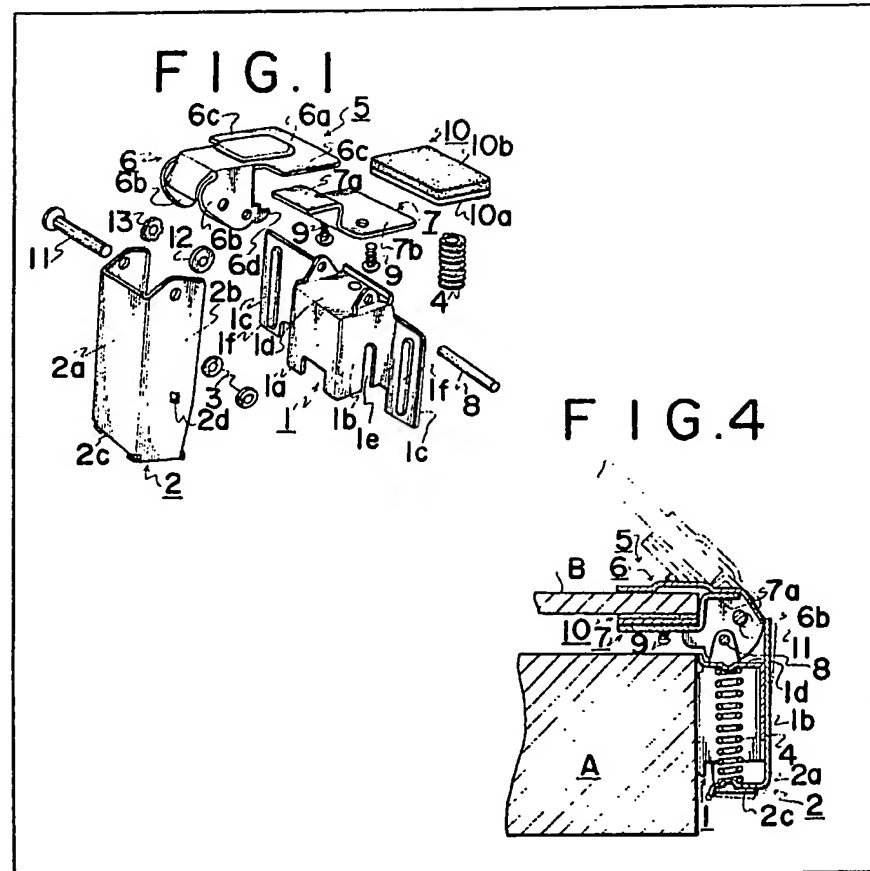
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(54) Improvements in or relating to hinges for attaching covers to record players or the like

(57) A hinge is provided for attaching a glass cover B to a cabinet A of a record player. The hinge comprises a hinge bracket 1 having a base plate 1a, a pair of side plates 1b a top plate 1d, and a pair of attaching plates 1c for attaching to the cabinet A. A spring case 2 has a base plate 2a, a pair of side plates 2b, movably engaged with the side plates 1b, of the hinge bracket 1, and a bottom plate 2c. A coil spring 4 is interposed between the top plate 1d of the hinge bracket 1

and bottom plate 2c of the spring case 2. A cover retainer 5 comprises one hinge plate 6 having a pair of side plates 6b provided with anchoring lugs and pivotally mounted on the side plates 1b and 2b, and another crank-like shaped hinge plate 7 inserted between the side plates 6b and engaged at substantially the center thereof with the lugs 6d. Since one hinge plate 7 is not inverted in the separating direction from the other hinge plate 6, the glass cover B can be attached to the hinge plates 6, 7 by attaching screws 9 without requiring any mounting holes to be made in the glass cover.



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FIG. 1

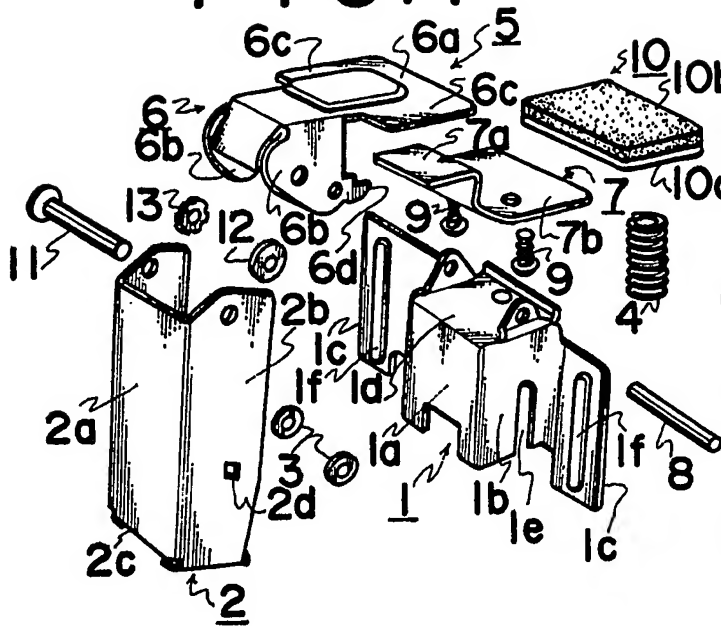


FIG. 2

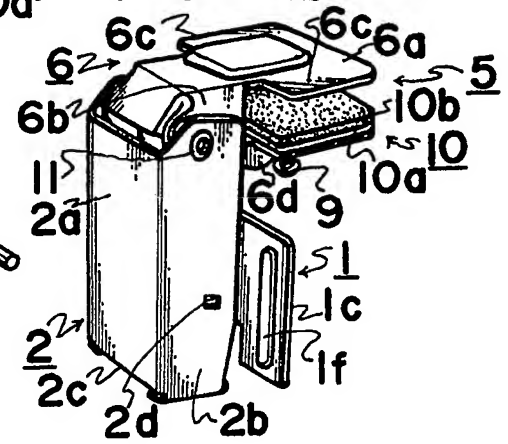


FIG. 3

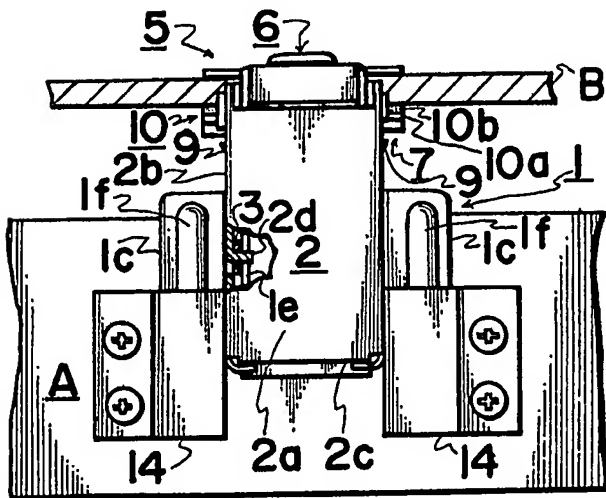
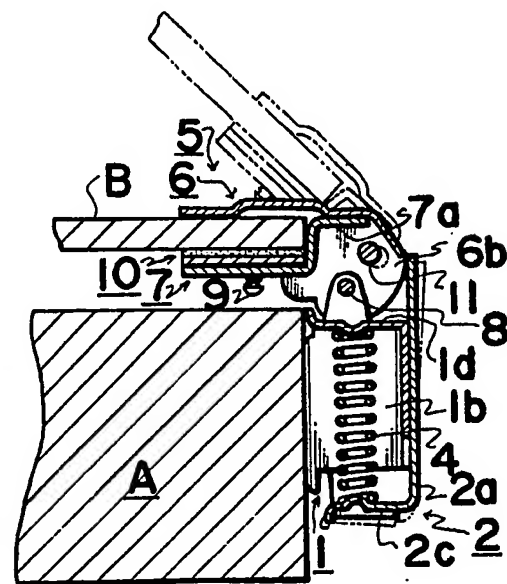


FIG. 4



SPECIFICATION

Improvements in or relating to hinges for attaching covers to record players or the like

The present invention relates to a hinge, which may, for instance be used to connect a glass cover to a cabinet of a record player or the like.

A known hinge for a glass cover has a pair of hinge plates adapted to receive therebetween the rear end of a glass cover provided with screw bores, so that the hinge is tightly fixed to the glass cover by means of screws which are screwed between the two hinge plates through the mounting holes of the glass cover which is sandwiched therebetween. In this conventional construction, a very large load is imposed on the area around the mounting holes of the glass cover during fixing work or during opening and closing of the glass cover and this can cause breakage of the glass constituting the cover. In addition, this conventional construction requires the troublesome work of forming mounting holes in the glass cover which is generally difficult to carry out.

According to one aspect of the invention, there is provided a hinge for allowing opening and closing of a cover, comprising a cover retainer constituted by a pair of hinge plates, one of the hinge plates having side plate portions pivotally attached to a hinge pin, the side plate portions being provided with a pair of anchoring lugs, one side portion of the other hinge plate being received by and fixed in the space between the side plate portions of the one hinge plate, the other hinge plate being retained substantially at its middle point by the anchoring lugs so as to prevent the other hinge from pivoting away from the one hinge plate, at least one of the pair of hinge plates being provided with attaching screws for fixing the cover when inserted into the cover retainer.

It is thus possible to provide an arrangement which permits a glass cover to be secured to the cover retainer of the hinge without necessitating the formation of mounting holes in the glass cover.

The invention will be further described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is an exploded, perspective view of a hinge, constituting a preferred embodiment of the invention, for pivotally securing a cover;

Figure 2 is a perspective view of the hinge of Fig. 1;

Figure 3 is a rear side view showing the hinge of Fig. 1 being inserted into a lock plate attached to a rear end portion of a cabinet; and

Figure 4 is a right side sectional view of the hinge of Fig. 1 connected between a cabinet and a glass cover.

Referring to Figs. 1 and 2, reference numeral 1 denotes a hinge bracket which is formed of an iron or steel sheet bent so as to have a convex shape, with a base plate portion 1a, two side plates 1b, fixing plates 1c, and a top plate 1d. A hinge pin 8

is journaled to the upper end portions of the side plates 1b. The side plates 1b are bent slightly inwardly at their mid portions to form shelf-like portions to hold the top plate 1d. Further, vertical slots 1e are formed in the side plates 1b.

Protuberances 1f are formed on the fixing plates 1c.

A spring case 2 is formed also of an iron or steel sheet bent to have a substantially U-shaped cross-section and to have a base plate portion 2a, two side plate portions 2b and a bottom plate portion 2c. Guide projections 2d are formed at middle portions of the side plate portions 2b, so as to project inwardly. The lower ends of the side plates 2d are bent slightly inwardly to hold the bottom plate 2c.

The hinge bracket 1 is accommodated in the spring case 2. The guide grooves 1e receive the guide projections 2d of the spring case 2. A friction member 3, such as a fibre washer, is inserted between the side plates 1b and 2b at each side at the guide projections 2d. A spring 4 providing a torque somewhat smaller than that resulting from the weight of a glass cover is disposed to act between the top plate 1d of the hinge bracket 1 and the bottom plate 2c of the spring case 2.

Reference numeral 5 generally designates a cover retainer constituted by a pair of hinge plates 6, 7. A front end of the cover retainer 5, when it is not used for securing the cover, is generally biased upwardly through the medium of the spring case 2, by means of the spring 4. In the drawings, however, the cover retainer 5 is illustrated in a depressed position overcoming the force of the spring 4 to assume a posture perpendicular to the hinge bracket 1, for the purpose of clarification of the drawings.

The upper hinge plate 6 is constituted by a base plate 6a having reinforcement ribs 6c, and two side plates 6b having shelf-like anchoring lugs 6d. A part of the base plate 6a is deflected or bent to project into the space between the side plates 6b to prevent the latter from being bent inwardly.

The other hinge plate 7 is bent at its side surface to have a crank-like shape as shown in Figs. 1 and 4 to form an insertable fixing portion 7a and a cover receiving portion 7b. The insertable fixing portion 7a is inserted between the side plates 6b of the hinge plate 6 and is fixed to the inner bottom portion of the base plate portion 6a of the hinge plate 6 by welding or the like. The cover receiving portion 7b at the middle portion of the hinge plate 7 is retained by the anchoring lugs 6d and, after attaching fixing screws 9 to the cover receiving portion 7b, a packing 10 composed of an iron or steel plate 10a and a rubber plate 10b superposed on the plate 10a is placed on the upper surface of the hinge plate 7 facing the hinge plate 6.

The side plate portions 6b of the hinge plate 6 constituting the cover retainer 5 are pivotally secured to the hinge pin 8, which is attached to the upper end portions of the side plates 1b of the hinge bracket 1, and is connected also to the side

plates 2b of the spring case 2 by means of a caulked pin 11.

The attachment of the glass cover B to the cover retainer 5 is made in the following manner.

- 5 The rear end portion of the glass cover B is placed between the hinge plate 6 and the packing 10. Thereafter, as the attaching screws 9 are tightened, the rear end portion of the glass cover B is pressed against the hinge plate 6 by the packing 10, because the insertable fixing portion 7a is fixed to the inside of the base plate 6a of the other hinge plate 6 and the middle portion of the hinge plate 7 is retained by the anchoring lugs 6d. Thus, the glass cover B can be secured to the hinge, without being provided with any mounting hole.

- 15 As an alternative form of the cover retainer 5, the insertable fixing portion 7a of the hinge plate 7 may be wound round the hinge pin 8 or, alternatively, the insertable fixing portion may be made to contact the hinge pin 8. Such an alternative arrangement provides an equivalent effect to that produced by the described embodiment.

- It is possible to secure the rear end of the glass cover B to the cover retainer 5, even if the packing 10 is omitted. However, the use of packing consisting solely of the rubber plate is effective in preventing withdrawal or dropping of the glass cover B. Further, the composite packing composed of the plate 10a and the rubber plate 10b superposed one on the other effectively distributes the pressure when the fixing screws 9, 9 are tightened, so that the glass cover B is protected from local concentration of pressure which might otherwise be generated to cause breakage of the glass cover.

- Another advantage is as follows. In a known hinge of the type described, the spring case 2 and the hinge plate 6 are connected to each other by means of, for example, an eyelet, and no frictional member or resilient member is interposed between the overlapping side plates 2b and 6b. In the embodiment shown, instead of the eyelet, the caulked pin 11 is inserted through a frictional member 12 such as of a fibre washer with a resilient member 13 such as a spring washer interposed between overlapped portions of the side plates 2b and 6b. At the same time, the head 11a of the pin 11 is caulked at a suitable pressure. As a result, frictional resistance is provided during rotation of the hinge plate 6 so that the opening and closing motion of the glass cover B is smoothed and abrupt jumping up of glass cover B is avoided even if the torque of the spring force of the spring 4 becomes stronger than the torque resulting from the weight of the glass cover B for some opening angle thereof.

- In a known construction, a spring retainer for retaining one end of the spring 4 is separately suspended in the spring case 2. Alternatively, a spring rod is provided on the bottom plate 2c of the spring case 2 to extend upward through a bottom plate of the hinge bracket 1, and the spring is disposed to act between the bottom plate of the bracket 1 and a spring retainer plate

screwed to the upper end of the screw rod. In the illustrated embodiment, however, the spring 4 is disposed to act between the top plate 1d of the hinge bracket 1 and the bottom plate 2c of the spring case 2 to simplify the construction. This arrangement does not cause undesirable flexure of the top plate 1d and the bottom plate 2c bearing the spring force of the spring 4, because the top plate 1d and the bottom plate 2c are held by the shelf-like portions provided on the side plates 1b and the lower ends of the side plates 2b, respectively.

- Figures 3 and 4 illustrate use of the hinge. The same reference numerals are used to denote the same parts or members as those in Figs. 1 and 2. According to Fig. 3, the fixing plates 1c of the hinge bracket 1 are shown being inserted into locking plates 4, attached to the upper rear end portion of a cabinet A of a record player or the like, by means of screws. Figure 4 shows the hinge with the fixing plates 1c fully inserted in the locking plates 14. The rear end portion of the glass cover B is secured to the cover retainer 5.

- In these figures, the closed condition of the glass cover B is represented by full lines. The spring 4 is in the fully compressed state to press the bottom plate 2c of the spring case 2 downward thereby to urge in a clockwise direction the hinge plate 6 of the cover retainer 5 so as to tend to open the glass cover B. However, since the spring force of the spring 4 is overcome by the weight of the glass cover B, opening of the glass cover B is avoided.

- As the glass cover B is opened, the cover retainer 5 is rotated clockwise, and the spring case 2 is moved downwardly as the guide projections 2d thereof are guided by the guide grooves 1e so as to open the glass cover B. In this condition, the spring 4 exerts a force which urges in a clockwise direction the hinge plate 6 of the cover retainer 5, through the medium of the spring case 2, so that the weight of the glass cover B is compensated by this biasing force to negate the feeling of weight of the glass cover B.

- The glass cover B thus opened is stopped as the caulked pin 11 abuts against one side of upper portions of the side plates 1b of the hinge bracket 1, so that further movement of the glass cover B in the opening direction does not occur. Thus, the open condition of the glass cover B is maintained by the force of the spring 4.

- For closing the glass cover B from the open condition, the members and parts operate in the reverse manner to the opening operation. In this case, as sudden closing of the glass cover B is counteracted by the spring force of the spring 4 which opposes the weight of the glass cover B, so that undesirable breakage of the glass cover B is avoided.

- During opening and closing of the glass cover B, a moderate braking effect is produced by the friction of the resilient member 13 and the frictional member 12 interposed between the side plates 6b of the hinge plate 6 and corresponding side plates 2b of the spring case 2, as well as the

- friction members 3 interposed between the mid portions of side plates 2*b* of the spring case 2 and the corresponding side plates 1*b* of the hinge bracket 1. As a result, the opening and closing operation can be made without any jolt or rattle. At the same time, undesirable jumping up of the cover due to the spring force which becomes predominant at some opening angle of the cover B is avoided. It is possible to stabilize the glass cover at an intermediate opening angle at which the spring force of the spring 4 and the weight of the glass cover B balance.

- Various modifications may be made with the scope of the invention. Thus, other constructions of parts of the hinge, for instance other than the cover retainer 5, may be used. For instance, it is possible to modify the hinge of the described embodiment by the use of a torsion coiled spring, tensile coil spring and the like, and the hinge can even be constructed without using any spring. However, it is preferred to use the cover retainer 5 in the hinge of the above-described construction.

CLAIMS

1. A hinge for allowing opening and closing of a cover, comprising a cover retainer constituted by a pair of hinge plates, one of the hinge plates having side plate portions pivotally attached to a hinge pin, the side plate portions being provided with a pair of anchoring lugs, one side portion of the other hinge plate being received by and fixed in the space between the side plate portions of the one hinge plate, the other hinge plate being retained substantially at its middle point by the anchoring lugs so as to prevent the other hinge plate from pivoting away from the one hinge plate, at least one of the pair of hinge plates being provided with attaching screws for fixing the cover when inserted into the cover retainer.

2. A hinge for allowing opening and closing of a cover, comprising a cover retainer constituted by a pair of hinge plates, one of the hinge plates having side plate portions pivotally attached to a hinge

- pin, the side plate portions being provided with a pair of anchoring lugs, one side portion of the other hinge plate being received by and fixed in the space between the side plate portions of the one hinge plate, the other hinge plate being retained substantially at its middle point by the anchoring lugs so as to prevent other hinge plate from pivoting away from the one hinge plate, at least one of the pair of hinge plates being provided with attaching screws for fixing the cover when inserted into the cover retainer, the hinge further comprises a packing disposed between the attaching screws and the cover when inserted.

3. A hinge as claimed in claim 2, in which the packing comprises an iron or steel plate and a rubber plate.

4. A hinge for pivotally connecting a glass cover or lid to an article, comprising a first hinge member for fixing to the article and a second hinge member pivoted to the first hinge member for receiving the glass cover or lid, the second hinge member comprising first and second parts fixed with respect to each other at or adjacent the pivot and having facing portions spaced apart to receive therebetween the edge of the glass cover or lid, one of the facing portions having screw-threaded means extending therethrough for holding the glass cover or lid against the other facing portion.

5. A hinge as claimed in claim 4, in which there is provided a packing member comprising a substantially rigid layer facing the one facing portion and a resilient layer facing the other facing portion for gripping the edge of the glass cover or lid between the other facing portion and the resilient layer.

6. A hinge substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

7. A record player or record deck comprising a glass cover or lid attached to a plinth by one or more hinges as claimed in any one of the preceding claims.